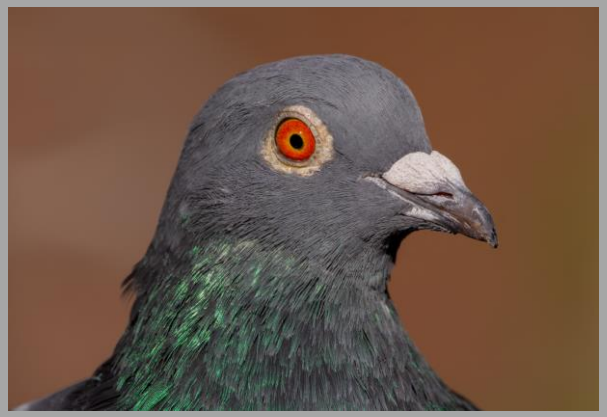
BECO

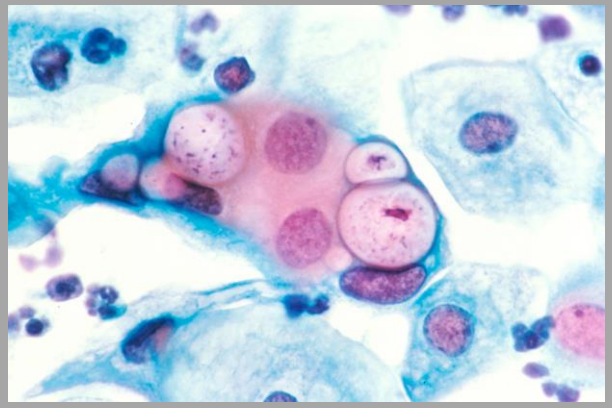
Behavioural Ecology and Ecophysiology

University of Antwerp



Feral Pigeons (Antwerp)

- Disease transmission
- Movement ecology
- Urbanisation
- Individual variation



Infection dynamics in the Anthropocene

Tracking super spreaders and infection hotspots in the urban jungle

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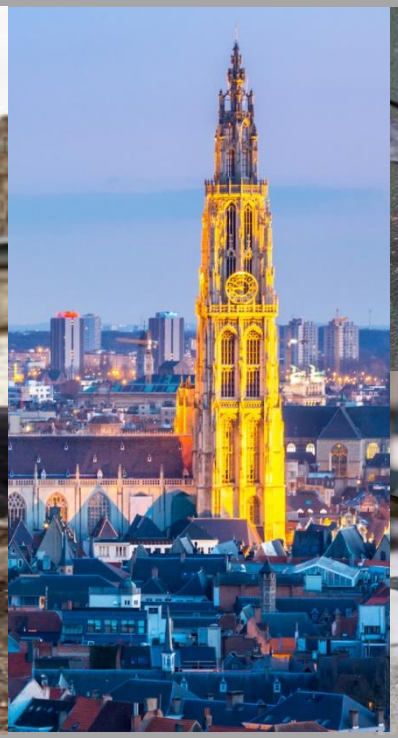
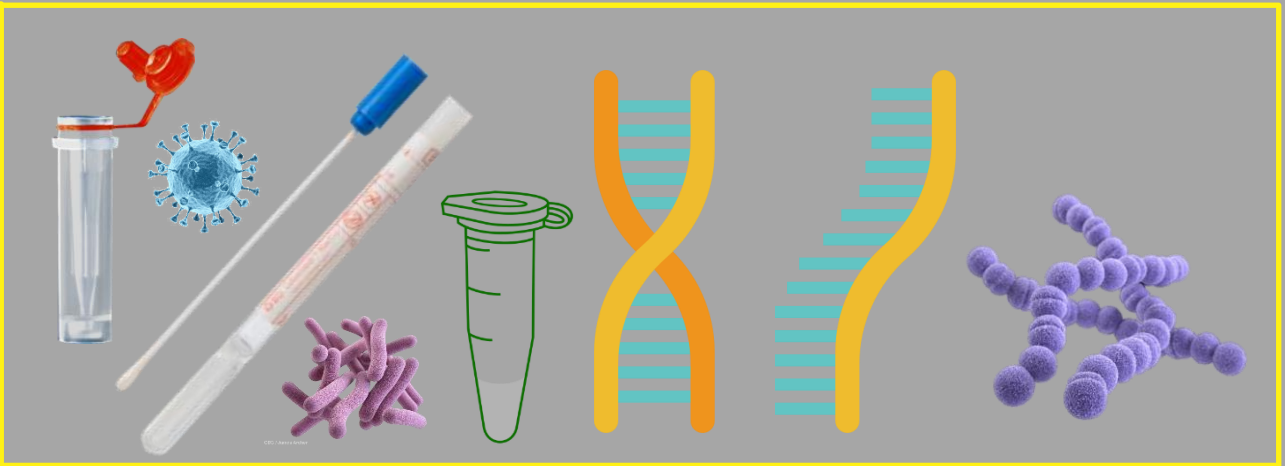


in collaboration with EVECO

Spatial variation in disease prevalence in urban environments

Cities offer a lot of feeding opportunities for wildlife, but these are often not equally distributed throughout the city. Clustering of resources can lead to high local pigeon abundances and hence a high risk of disease transmission. The aim is to search for and find these infection hotspots.



Description of tasks:

- Catching and sampling of feral pigeons in the City of Antwerp
- *DNA/RNA extractions, PCR, Sequencing*
- *Analysis of the spatial distribution of the disease*

Contact: Valentin Kiss valentin.kiss@uantwerpen.be or Bram Vanden Broecke Bram.VandenBroecke@uantwerpen.be

Individual variation in disease transmission – linked sociability?

Individuals that are more social might interact with more conspecifics and occupy more central positions in the network so they might more likely transmit the disease. Here the aim is to identify and characterize these superspreaders.

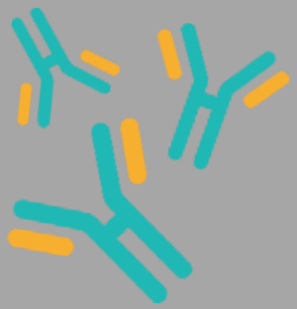
Description of tasks:

- *Behavioral experiments and observations in the wild*
- *Catching and marking pigeons*
- *Video analysis*

Contact: Valentin Kiss valentin.kiss@uantwerpen.be or Bram Vanden Broecke Bram.VandenBroecke@uantwerpen.be

Immunity: not all pigeons will be equal

Becoming infected as well as the intensity of infection will depend on how well the immune system is functioning. Yet how and why differ individuals in immunity if that is such an important trait?



Description of tasks:

- Catching and sampling pigeons
- *Analysis of immune parameters*
- *Analysis of infection status*

Contact: Valentin Kiss valentin.kiss@uantwerpen.be or Bram Vanden Broecke Bram.VandenBroecke@uantwerpen.be

Lesser black-backed gulls (Zeebrugge)

- Parental cooperation
- Foraging ecology
- Early development
- Individual variation

On the spot: how to establish a territory?

- High breeding density areas are characterized by a higher breeding success. This suggests that there is a high level of competition to get and maintain these territories.
- By combining time lapse photography, behavioral observations and field experiments (manipulations of breeding density), we aim at understanding:

  1) how gulls invest their time to successfully establish a territory, offspring care and self-maintenance,

  2) how social interactions shape the acquisition and maintenance of territories, and ultimately

  3) relating those aspects to reproductive success

Description of tasks: Possibility to do fieldwork with wild seabirds (about 1 day per week during March and April). The rest of the year the work will be based at CDE. The student will receive support with statistical analysis.

Contact: wendt.mueller@uantwerpen.be

Canaries (CDE)

- Parental care
- Conflicts of interest
- Early development
- Cognition

Flexibility of seed preferences in canaries

Summary:

- Canaries show great individual variation in seed preferences.
- Surprisingly, some canaries show preference for seed types they have very little prior experience with.
- Question: how flexible are individual canaries in their seed preferences (and how does the introduction of new seeds affect this)?

Only IP: available for max. 2 students

Description of tasks: Food choice experiments and analysis of video recordings, very limited statistics

Location and timing: CDE (video analysis can be done at home), timing is flexible

Contact: tim.andries@uantwerpen.be or wendt.muller@uantwerpen.be

Neglectful food provisioning in abusive female canaries

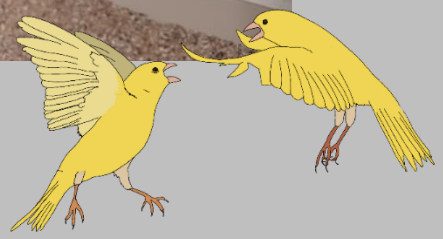
30-40% of female canaries start to **abuse** their chicks between day 14-19 by **plucking the feathers** of their own nestlings before fledging, and this has a negative effect on the nestling's weight.

Could maternal physical abuse be part of a broader life history strategy? Are abusive females allocating food differently within (high vs. low quality offspring) or among (current vs. future offspring) broods?
And what is the role of the male in this scenario?

Description of tasks: Parental provisioning tests (hunger manipulations, video recordings, marking the chicks, and weight measurements) and video analysis. The student will also receive support with statistical analysis of the data.

Location and timing: CDE, data collection in March-April (IP or MT)
Contact:
Clara.GarciaiCo@uantwerpen.be or wendt.muller@uantwerpen.be

Impulse control in abusive female canaries



30-40% of female canaries start to **neglect** their chicks **or pluck the feathers** of their own nestlings before fledging.

Could maternal abuse/neglect behaviour be part of a more aggressive behavioural phenotype with **impulsivity control deficits**?

Description of tasks: behavioural response tests on female canaries (aimed at impulsivity and aggression) and video analysis. The student will also receive support with statistical analysis of the data.

Location and timing: CDE, data collection in January-February and/or May (IP)

Contact:
Clara.GarciaiCo@uantwerpen.be or wendt.muller@uantwerpen.be

Great and blue tits (CDE)

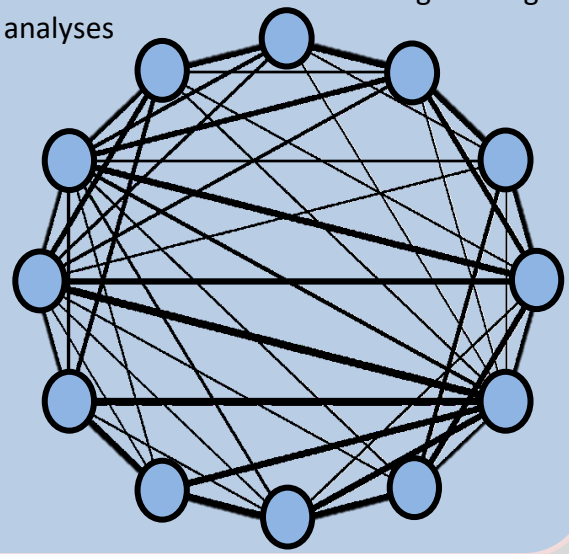
- Animal personality
- Urban ecology
- Individual variation
- Cognition

Maternal programming of offspring social phenotype

Early life environment, including the position in the **family social network**, has long-term **effects on the future fitness** of individuals. Mothers can **prepare their offspring to thrive better under specific conditions.**

Could **nestlings' social phenotype** be **programmed for a particular family size?** How much depends on the **expected family size** and how much on the **actual family size**?

Description of tasks: elaboration of matrixes of interactions between nestlings through observation of video recordings for posterior analyses using a social networks approach.
The student will also receive support with statistical analysis of data.



Location and timing:
CDE, end November-February
(IP or MP possible)

Contact:
alejandro.garciaanton@uantwerpen.be
or wendt.muller@uantwerpen.be

WE WANT
YOU !